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PATENT  
514453-3853

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : Dübal et al.  
U.S. Serial No. : 09/700,517  
International  
Application No. : PCT/EP99/03437  
International  
Filing Date : May 19, 1999  
For : MONOSTABLE FERROELECTRIC ACTIVE-MATRIX  
DISPLAY

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William F. Lawrence, Registration No. 28,029  
Name of Applicant, Assignee or Registered  
Representative

Signature

February 15, 2001

Date of Signature

COMMUNICATION

Assistant Commissioner for Patents  
Box PCT  
Washington, D.C. 20231

Sir:

Enclosed for the Examiner's convenience is a copy of


PATENT  
514453-3853

the International Preliminary Examination Report in  
PCT/EP99/03437.

Respectfully submitted,

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By

  
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## PATENT COOPERATION TREATY

**PCT**  
**NOTIFICATION OF TRANSMITTAL**  
**OF COPIES OF TRANSLATION**  
**OF THE INTERNATIONAL PRELIMINARY**  
**EXAMINATION REPORT**

(PCT Rule 72.2)

From the INTERNATIONAL BUREAU

To:

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Date of mailing (day/month/year) 27 November 2000 (27.11.00)	
Applicant's or agent's file reference H60314PC/ih	<b>IMPORTANT NOTIFICATION</b>
International application No. PCT/EP99/03437	International filing date (day/month/year) 19 May 1999 (19.05.99)
Applicant AVENTIS RESEARCH & TECHNOLOGIES GMBH & CO. KG et al	

**1. Transmittal of the translation to the applicant.**

The International Bureau transmits herewith a copy of the English translation made by the International Bureau of the international preliminary examination report established by the International Preliminary Examining Authority.

**2. Transmittal of the copy of the translation to the elected Offices.**

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following elected Offices requiring such translation:

CA,CN,JP,KR,PL,US

The following elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

EP,BR,CZ,HU,MX,RU

**3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).**

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report.

**It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.**

The International Bureau of WIPO  
 34, chemin des Colombettes  
 1211 Geneva 20, Switzerland

Authorized officer

Manu Berrod



**Translation**

**PATENT COOPERATION TREATY**

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**PCT**

**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference H60314PC/ih	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP99/03437	International filing date ( <i>day month year</i> ) 19 May 1999 (19.05.99)	Priority date ( <i>day month year</i> ) 20 May 1998 (20.05.98)
International Patent Classification (IPC) or national classification and IPC G02F 1/141		
Applicant AVENTIS RESEARCH & TECHNOLOGIES GMBH & CO. KG		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>1</u> sheets.</p>	
<p>3. This report contains indications relating to the following items:</p> <p>I <input type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input checked="" type="checkbox"/> Certain defects in the international application</p> <p>VIII <input checked="" type="checkbox"/> Certain observations on the international application</p>	

Date of submission of the demand 17 December 1999 (17.12.99)	Date of completion of this report 18 August 2000 (18.08.2000)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP99/03437

## I. Basis of the report

1. This report has been drawn on the basis of (Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments )

- ☐ the international application as originally filed.
- ☒ the description, pages 1-13, as originally filed,  
pages \_\_\_\_\_, filed with the demand,  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☒ the claims, Nos. 1-4, as originally filed,  
Nos. \_\_\_\_\_, as amended under Article 19,  
Nos. \_\_\_\_\_, filed with the demand,  
Nos. 5-8, filed with the letter of 24 May 2000 (24.05.2000),  
Nos. \_\_\_\_\_, filed with the letter of \_\_\_\_\_.
- ☐ the drawings, sheets/fig \_\_\_\_\_, as originally filed,  
sheets/fig \_\_\_\_\_, filed with the demand,  
sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_,  
sheets/fig \_\_\_\_\_, filed with the letter of \_\_\_\_\_.

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

4. Additional observations, if necessary:

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1-8	YES
	Claims		NO
Inventive step (IS)	Claims	6	YES
	Claims	1-5, 7, 8	NO
Industrial applicability (IA)	Claims	1-8	YES
	Claims		NO

### 2. Citations and explanations

1. The table in column 6 of document US 4 783 148 describes a ferroelectric display comprising a liquid-crystal layer in the form of a monodomain with clearly defined direction of the layer normals  $z$  to the  $\text{SmC}^*$ -phase (cells 1 to 3, with a liquid crystal mixture having a mixing ratio of 85:15), wherein the layer normal  $z$  and the preferred direction  $n$  of the cholesteric phase form a finite angle (see Figure 3B). The subject matter of Claim 1 therefore differs from the above known display in that

- (i) it is an active-matrix display; and
- (ii) the finite angle is greater than  $5^\circ$ .

The subject matter of Claim 1 therefore meets the requirements of PCT Article 33(2).

2. The display suggested in Claim 1 of the present application cannot be considered inventive for the following reasons:

The first of the above two features merely describes a known alternative in the field of displays. In

other words, it is known to a person skilled in the area that ferroelectric displays can be operated as both passive-matrix displays, i.e. not using one switching element per pixel, and active-matrix displays (cf. Patent Abstracts of Japan, 08 152 654). Selection of a mode of control, i.e. passive or active, suitable for the intended application is obviously a matter of routine practice since the problems and effects associated therewith are well known to a person skilled in the art.

US 4 783 148 does not indicate an angle greater than  $5^\circ$ . Figure 3B, however, represents a situation in which the angle is approximately  $45^\circ$ . Even taking into consideration the fact that the figure is only a schematic representation of the alignment of the liquid crystal molecules in the two phases, a person skilled in the art would nevertheless see from said figure that the angle is intended to have a significant value. Fixing a minimum value of  $5^\circ$  therefore does not involve an inventive step.

Document US 4 783 148 does not explicitly state that it relates to a monostable display. However, since the essential characteristic features of the claimed display correspond to those of the known display (the absence of switching elements is insignificant for the presence of monostable behaviour), it may be assumed that the known display too is monostable.

The subject matter of Claim 1 therefore does not involve an inventive step and does not meet the requirements of PCT Article 33(3).

3. The features of the dependent Claims 3 and 5 relate to limitations which are already disclosed in US 4, 783 148 (column 6, phase sequence, table showing a pitch of 750  $\mu\text{m}$ ).

The features of the dependent Claims 2 and 4 describe parameter ranges of parameters which are not discussed in US 4 783 148. However, the limit values given define ranges which are a matter of standard practice for a person skilled in the art.

The subject matter of the above claims therefore does not involve an inventive step.

4. None of the present documents describes a method for the production of active matrix displays wherein the directions of friction on the upper and lower substrate plates are substantially parallel and a direct voltage is applied to the display during cooling.

The method of Claim 6 is therefore novel and involves an inventive step.

5. It would be obvious to a person skilled in the art to use the display suggested in Claim 1 in information processing applications, for example in a laptop computer.

The subject matter of Claims 7 and 8 therefore does not involve an inventive step and consequently does not comply with PCT Article 33(3).



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

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## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

1. Contrary to the requirements of PCT Rule 5.1 (a)(ii) the description does not mention the documents US 4 783 148, Patent Abstracts of Japan 08 152 654 and K. Nito et al. " A Novel Surface-Stabilized Monostable Ferroelectric LCD", Conference Records of the 1991 International Display Research Conference, pp. 179-182, nor does it indicate relevant prior art disclosed therein.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. Independent Claim 8 and dependent Claim 9 do not meet the requirements of PCT Article 6 since it is not clearly stated which special technical features characterize the use of active-matrix displays in television, high-definition television, multimedia and information-processing applications.